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ANALYSIS**

 **LAKSHYA ACADEMY**[®]

04 AUGUST 2023

1 – About the Railway Protection Force:

GS III

Internal Security

- **Context:**

- A police officer from the Railway Protection Force (RPF) is accused of shooting and killing four passengers on a train.

- **Information about the RPF (Railway Protection Force):**

- The RPF is an armed force that is under the operational and administrative responsibility of the Union Ministry of Railways.
- Its responsibility is to protect the railroad's property, the passenger areas, and the actual passengers.
- The RPF was established as a result of the Railway Protection Force Act of 1957, which was approved by Parliament.
- Its implementation was made possible by the Railway Protection Force (revision) Act, 1985, a significant revision to the Act.
- The RPF is run by a director general.
- There are over 74,000 members of the force.
- As a district police officer, the GRP answers to the state government.
- Along with the RPF, it operates.
- Criminal behaviour on trains is typically stopped and discovered by the Government Railway Police.
- They are not in charge of protecting railway property, though.

- **Source** → *The Hindu*

2 – Details of the ULLAS mobile application:

GS II

Government Policies and Interventions

- **Context:**

- There was just a new smartphone app released in Ullas.

- **Important details:**

- The ULLAS's full name is Understanding Lifelong Learning for All in Society.

- **Aim:**

- to improve literacy basics.
- The NCERT DIKSHA portal will enable students to interact with a variety of learning resources[®] through this interesting and user-friendly software.

- **ULLAS will give priority to developing:**

- An effective level of literacy.
- professional knowledge.
- financial expertise.
- legal expertise.
- digital know-how.
- allowing people to take part in the process of constructing a country.
- It gives locals who lost the chance to go to school and are at least 15 years old a foundational education, financial literacy, and important life skills.

- **Source** → *The Hindu*

3 – About the Biodiversity Heritage Sites:

GS III

Environmental Conservation related issues

- **Context:**

- The Odisha t has identified three locations as Biodiversity Heritage Sites (BHS).

- **Important details:**

- **These are what they are:**

- Mountains in Mandasaru.
- Mahendragiri Hills.
- The Gandhamardan Hills.

- **SWRs (Species-Rich Zones):**

- Biodiversity Heritage Sites are unique and biologically vulnerable coastal, inland, marine, and terrestrial habitats.

- The biosphere in these areas is diversified and contains one or more of the following:

- animal variety.
- very high endemism.
- existence of keystone species, endangered species, and rare and important species from an evolutionary perspective.
- existence of wild relatives of domesticated or farmed species.

- Fossil beds serve as a reminder of the former dominance of living elements.

- The preservation of cultural diversity depends on the existence of those areas that uphold fundamental cultural, ethical, or aesthetic values.

- After consulting with neighbourhood associations, the State Government may designate locations as Biodiversity Heritage Sites (BHS) in accordance with the Biological Diversity Act, 2002.

- The classification of a territory as a BHS has no impact on the local communities' traditional ways of life.

- **Source → The Hindu**

4 – Details of the hybrid EV structure:

GS III

Environmental Conservation related issues

- **Context:**

- Hybrid EVs offer a big opportunity for economically developing countries to shift to being net-zero.

- **What does a car being "net-zero" mean?**

- A car's net-zero emissions include both internal combustion engine and exhaust emissions.
- To reach net-zero transportation, emissions from both newly manufactured cars and pre-existing vehicles must be reduced.

- **Different EV types include:**

- Any vehicle with an electric drivetrain that gets its energy from a portable electrical energy source is considered an electric vehicle (EV).

- **Hybrid EVs:**

- An internal combustion engine (ICE) and an electrical generator are both employed to produce power in a hybrid electric vehicle (EV).
- A tiny battery, typically 1 to 5 kWh, is used as an energy buffer to store the electricity in a hybrid electric vehicle (EV).
- The battery cannot be recharged by the grid.

- In a fully electric car, a battery-powered car, or a plug-in electric car, there is no ICE, hence there are no exhaust gases.

- The battery is typically much larger, with capacities ranging from 20 to 120 kWh.
- It can only be refuelled by the grid.

- **Electric vehicle plug-in hybrid:**

- Although a plug-in hybrid electric vehicle (PHEV) is still a hybrid electric vehicle (EV), it has a much larger battery, often between 5 and 15 kWh.
- This larger battery can also be charged from the grid.

- A plug-in hybrid car functions similarly to an all-electric vehicle as long as the battery has charge.
- **Vehicle powered by fuel cells:**
 - A fuel cell is used in a fuel-cell electric vehicle (FCEV) to power the drivetrain, and a tiny battery buffer is used to handle variations.
- **Totally electric and hybrid vehicles' fuel economy:**
 - Due to the use of an ICE in conjunction with a generator and battery, a hybrid electric vehicle (HEV) has a fuel economy that is 1.5–2 times greater for city driving and 1-1.5 times higher for highway travel than a regular ICE automobile.
 - A plug-in hybrid vehicle combines the best aspects of hybrid and fully electric vehicles.
 - Thanks to a small battery (5-15kWh) that can be charged from the grid, it can accomplish 80–90% of all short daily trips in an all-electric mode while using 3–4 times less petrol than conventional cars.
- **The overall emissions of EV hybrids:**
 - Along with fuel efficiency, a vehicle's net emissions are an important consideration.
 - Well-to-wheel emissions include both emissions from the combustion of fuel, whether it be electricity or fossil fuels, and emissions from the fuel's production.
 - The more comprehensive life-cycle emissions index accounts for emissions from well to wheel as well as emissions from the creation, maintenance, and recycling of batteries and cars.
 - Currently, different countries' grid decarbonization levels vary (Figure 2).
 - Lower power production emissions result in lower well-to-wheel and life-cycle emissions for completely electric vehicles.
- **EV life-cycle emissions versus ICE vehicle emissions:**
 - Even though fossil fuels make up the majority of India's energy mix, moving to entirely electric vehicles will result in SUV emissions reducing by 38-49% and sedan emissions falling by 19-34%.
 - It is predicted that emissions will decrease by 30 to 56 percent by 2030, when renewable energy sources will account for a larger share of the system.
 - Hybrid EVs have 20–23% fewer emissions than conventional EVs, according to a research that compared their life-cycle emissions in Europe (Figure 4).

- **Making the switch to electric mobility has several challenges:**

- **A rapid charging infrastructure:**

- For a smooth transition to totally electric vehicles, speedy charging infrastructure along roadways is required.
- If there is no infrastructure for fast charging, people won't buy entirely electric vehicles.
- Fast charging is defined as power outputs of 50–350 kW for cars and up to 1,000 kW for heavy-duty vehicles.
- Fast charging will enable drivers to cover long distances in their EVs with only 10 to 20 minute breaks, extending their ranges to 300 to 400 km.

- **No grid connection:**

- Many places on earth lack access to a grid or the grid isn't totally stable, especially those that are still developing economically.
- The comparatively high charging power for slow-charging (22kW) and fast-charging (350kW) highlights the difficulty in respect to producing and gearing capacity.
- Thus, the transition to EVs might be delayed.

- **Expensive:**

- Vehicles cost significantly less on the mass market in underdeveloped nations, under \$12,000 on average.
- In the near future, EVs with a 300–400 km range will cost between \$25,000 and \$35,000, making them competitive with traditional cars in the world's richest countries.
- The pricey batteries are the cause of this.
- Due to the need for larger battery packs, EVs with greater ranges will cost more.

- **Future strategies for hybrid cars:**

- Hybrid electric vehicles need to receive more focus:
- The industry's top objective right now is fully electric vehicles, but this isn't realistic for the foreseeable future due to grid reliability, the state of highway charging infrastructure, and prohibitive vehicle prices.
- In the interim, hybrid EVs, whether full or plug-in hybrids, present a big possibility to reduce emissions until we have full EVs powered entirely by renewable energy.

- **Hybrid cars reduce pollutants while using less fuel:**

- Due to hybrid vehicles' 1.5 to 2 times greater fuel efficiency and plug-in hybrid vehicles' 3 to 4 times greater fuel economy when driving on electricity, fuel costs, pollution, and oil imports are all greatly reduced.

- Without the need for large batteries, plug-in hybrids can match the benefits of full electric vehicles, especially in terms of emissions and performance.
- **Regenerative braking can boost fuel economy:**
 - Regenerative braking is a technique used in hybrid electric cars (EVs) to improve fuel economy, particularly in urban areas with heavy stop-and-go traffic and on steep terrain.
 - Regenerative braking slows an automobile down by recovering kinetic energy rather than wasting it as heat in the braking system.
 - At junctions and during times of heavy traffic, fuel can be conserved by using an engine start-stop system.
- **Small price variation:**
 - Regardless of the vehicle's range, hybrid automobiles cost between 5 and 15 percent more to purchase than normal cars.
- *Source → The Hindu*

5 – All about the Paharis and Paddaris:

GS I

Indian Culture

- **Context:**
 - The government has suggested adding the Paharis and the Paddaris to the list of the Scheduled Tribes (STs) in Jammu and Kashmir.
- **Pahari ethnic group:**
- **In relation to the tribe:**
 - The Paharis are a group of people who originated in Kashmir and settled there over time. They identify as Muslims, Sikhs, and Hindus.
- **Booking a hotel room in 2019:**
 - The Pahari people received a 4% reserve in 2019 for both job and educational opportunities.

- In order to identify groups that are socially, educationally, and economically disadvantaged, the Justice (retd) G D Sharma Commission was founded in 2019.
- In their report, the Commission recommended designating the Gadda Brahmins, Kolis, Paddari Tribe, and Pahari Ethnic Group as ST.
- The report was sent to the Tribal Affairs Ministry in 2022, where it was then approved by the Registrar General.

- **The Paddari tribe:**
- They live in a secluded area in Paddar.
- In Paddari, there were 21,548 residents as of the 2011 census, of whom 83.6% identified as Hindu, 9.5% as Buddhist, and 6.8% as Muslim.
- Locals communicate using Paddari.

- *Source → The Hindu*



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